THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

252.] PUBLISHED EVERY SATURDAY. [MARCH 5, 1836

TUTBURY CASTLE, STAFFORDSHIRE.

[Interior of Tutbury Castle-Yard.]

THE Dove, which from its rise on the southern side of Ax-edge, within a few miles of Buxton, to its confluence with the Trent, in the neighbourhood of Burton, forms the natural boundary of the counties of Derby and Stafford, runs through the romantic Dovedale, and visits in its course a variety of picturesque scenery, noble mansions, and antique remains. A description of Dovedale has been given in the 126th No. of the 'Penny Magazine.'

Tutbury is seated on the south or Staffordshire side of the Dove, and is a very clean pretty place, mostly inhabited by farmers and husbandmen, and by such handicraftsmen as are usually to be found in every town and village. It possesses no place of manufacture, except a cotton-mill, but this gives employment to the young of both sexes in the surrounding neighbourhood. Seated at the extremity of a high tract of ground, known as Needwood Forest, it is well sheltered from the eastern winds, while in the opposite direction it overlooks a rich valley, interspersed with woods, villages, and mansions, bounded by the towering hills of Derbyshire.

Tutbury lies about eleven miles south-west of Derby, and about a mile south of the road to Uttoxeter and the potteries. The castle forms a prominent object to the left in many parts of the road from Derby, but the most picturesque view is obtained of it from a point near the river. The ruins appear towering over the wood-covered hill, and the church is seen on a bare slope a little distance below, while some tall fragments to the right appear like broken pyramids in the elevated horizon. It forms altogether from this point one of those pictures on which the eye of taste delights to dwell.

The castle, or rather its ruin, is situated to the south-west of the town. Built on the summit of a high natural mount, with a deep and rapid river in front, it must once have been a very grand and imposing object. The castle-yard now forms the homestead of a farm, and part of the buildings on the southern side, with the addition of a semi-octagonal tower-like entrance, is fitted up as the residence of the farmer; all the other parts are but fragments of walls. The engraving represents the interior of the castle-yard.

It is difficult to determine when Tutbury Castle was first erected. From its forming one of the chain of forts on the Mercian frontier, it was probably in existence during the Heptarchy, and is conjectured to have been the palace of Offa, of Kenulph, and of Ethelred; the last of whom came to the throne in 674, and immediately on his accession "granted to his niece, the pious Werburga, the neighbouring village of Hanbury, where she erected a nunnery, in which she was afterwards buried." "After a peaceful interval of 200 years from the accession of Ethelred," says Sir Oswald Mosley, "the town and castle of Tutbury, together with the monastery at Hanbury, were overwhelmed

in one common destruction by that formidable irruption of the Danes, who drove the last of the Mercian sovereigns from his throne."

"From this fatal period," Sir Oswald continues, "the castle remained a ruin until after the Norman conquest, and the ferocious Danes continued to exercise their tyrannical sway in its vicinity for more than forty years, when the Saxons, assisted by the brave Ethelfleda, daughter of Alfred the Great, succeeded in expelling them from this part of the kingdom: their triumph, however, was but transitory; the Danes returned, and a second time became masters of the country, until at length (A.D. 1012) the Saxon inhabitants, goaded by oppression, and driven to despair, eagerly embraced King Ethelred's plan of extirpating the whole race by one general massacre, and the opening scene of this bloody tragedy is actually fixed by an ancient historian at Houndhill, about five miles distant from Tutbury."

In Domesday we find the castle of Tutbury, with 146 lordships in the surrounding counties, besides many others in various parts of the kingdom, was held by Henry de Ferrers, a particular favourite of William I. He raised the castle from its ruins, built it upon a more capacious and splendid plan, and made it for a time his principal residence; he rebuilt the citadel or keep, "excavated the fosse, and enclosed the whole of the present area within the walls of his castle," and founded in its immediate vicinity "a priory which he and his wife Bertha richly endowed."

The castle of Tutbury continued to be the residence of the family of Ferrers, till the latter end of the reign of Henry III., when in consequence of the repeated acts of rebellion of Robert de Ferrers, Earl of Derby, it was nearly destroyed by the king's army; and the lordship or honour, after repeated acts of clemency on the part of the king, was finally forfeited, and became by royal grant the property of Edmund Plantagenet, Earl of Lancaster, second son of the king.

The castle seems not to have met with much reparation from the hands of Earl Edmund, but his successor Thomas, the second Earl of Lancaster, not only repaired the ravages it had sustained while in the hands of the Earl of Derby, but gave to it a grandeur and magnificence which it had not previously possessed. He made it his principal residence, and, from the more than princely style in which he lived, became a benefactor to the surrounding country, giving a stimulus to the industry of his tenantry, and finding a mart for all their productions; his housekeeping in one year (1313) amounting to the amazing sum of 22,000*l.* of our present money, and this too at a time when provisions of all kinds were remarkably cheap. An account of the fate of Earl Thomas will be found in No. 166 of the 'Penny Magazine,' with some particulars respecting the finding of the Tutbury coins in the bed of the Dove in 1831.

By the attainder of the Earl of Lancaster the castle became the property of the crown, and was granted in succession to different persons, none of whom appear to have taken any interest in its restoration. It became at last vested in the celebrated John of Gaunt, the second Duke of Lancaster, by whom it was again restored to its former strength and beauty. On his return to England after his marriage with the Lady Constance, Queen of Castile and Leon, he gave his duchess the choice of his various castles for her abode, and she, without hesitation, fixed on Tutbury, which the duke immediately fitted up for her as a royal palace. It became her residence; and, as is well observed, "this was by far the most prosperous period in the annals of Tutbury: the splendour of the queen's court,—the number of strangers who daily resorted there,—and, above all, the magnificent liberality of John of Gaunt, rendered this place somewhat similar to a modern Windsor. The town of Tutbury was enlarged far beyond its ancient dimensions;—the agriculturist found here a ready market for his produce, and the merchant for his goods;—everything contributed to enrich the inhabitants, and to increase the value of property in the vicinity."

On the accession of Henry of Bolingbroke to the crown, Tutbury, and the other parts of the duchy of Lancaster, which had descended to him as duke of Lancaster, became the property of the kings of England. Its popularity passed away;—other events fixed its proprietors in other parts of the kingdom, and few among them ever condescended to rest a night in this once-favoured castle. Henry VII., indeed, whose reign was comparatively peaceful, sometimes brought his court hither to enjoy the amusement of hunting in the adjacent Forest of Needwood, and of one of his excursions we find the following anecdote:—

"One day, during the ardour of the chase, he was separated from all his companions; and having in vain sought to join them again through the thick masses of wood with which the forest abounded, he determined at length to extricate himself from his difficulties by proceeding to the nearest village, and inquiring his way from thence to Tutbury. It so happened that, for this purpose, he stopped at the house of a poor man named Taylor, in the village of Barton-under-Needwood, whose wife had, not long before, presented him with three sons at a birth. The father volunteered his services to conduct the king (who did not disclose his rank) to the place of his inquiry; and while he was making himself ready for that purpose, the mother introduced the three little babes to the stranger at the cottage-door. The king was much pleased with the adventure; and, in reward for the poor man's services, undertook to pay for the education of the three children, if they should live long enough to be put to school. Taylor expressed his grateful thanks, and the king did not forget his promise. When the three children attained man's estate, they had made such good use of the learning thus afforded them, that they all became doctors in divinity, and obtained good preferment. John Taylor, the eldest of them, became Archdeacon of Derby, Rector of Sutton Coldfield, and Clerk of the Parliament that sat in the seventh year of the reign of Henry VIII. He was made Master of the Rolls in 1528, and died in 1534; but not before he had proved his gratitude to the Almighty Disposer of Events for the singular mercies extended to himself and his brothers by erecting the present church of Barton, near the site of the cottage in which they first saw the light."

Tutbury Castle seems not to have been noticed during subsequent reigns; in that of Elizabeth it acquired notoriety as being, at two different periods, the prison of the fair but unfortunate Queen of Scotland. She was brought hither, under the custody of the Earl of Shrewsbury, in January, 1569. She left Tutbury for Wingfield Manor in the spring, under the guardianship of the same earl, whence she was removed to Coventry in November. In about two months she was brought back to Tutbury; soon afterwards she went to Wingfield, and in the course of the summer to Chatsworth. During the next fourteen years "she resided principally at Sheffield, occasionally visiting Chatsworth and Buxton. In the months of October, November, and December, 1584, she was again at Wingfield, having been placed there under the care of Sir Ralph Sadler, and on the 14th of January following was brought back through Derby to Tutbury Castle."

Sir Ralph Sadler in his papers gives a very accurate description of the state of Tutbury Castle during the last imprisonment of the unfortunate Mary. "The whole area, containing about three acres, was encompassed on all sides but one with a strong and lofty

embattled wall and deep fosse, as the present ruins plainly show. The principal entrance was by a bridge under the great gateway to the north; at a small distance to the left of this gateway stood a building containing Mr. Dorell's (the superintendant) office and bedchamber, and four other rooms. Along this north-east wall, about 160 feet from the entrance, was a lofty tower embattled, containing four rooms, viz., a store-house at the bottom, above Curle's apartment, over which was the Doctor's, and at the top the chief cook's. This tower was then much shaken and cleft, but it still forms a prominent feature among the castle ruins. At a little distance from this began the principal suite of the queen's apartments, which did not overlook the walls, but formed a long line of low buildings, on the eastern side of the area; they contained the queen's dining-chamber and closets adjoining, her bed-chamber, cabinet, place for wood and coals, and her gentlewomen's apartments." The site of the present farmer's house were store-rooms, kitchen, scullery, &c.; and where the modern erected round tower now stands upon the mount was the Keep, called Julius's Tower, even at that time in a state of ruin. The dungeons or vaults under the greater part of the building were used as store-rooms for provisions and goods.

Sir Oswald Mosley remarks, "After the departure of Mary Queen of Scots, no incident occurred at Tutbury during the remainder of Elizabeth's reign which is worthy of notice. Her son, King James I., visited more than once this place of her captivity; in all probability his feelings were not much affected when he surveyed the late abode of his unfortunate mother, for extreme sensibility was not one of his foibles. His purpose in coming here was not to indulge melancholy reflections, but to gratify an occasional delight which he took in the diversion of hunting; the scenery of Needwood particularly attracted his notice, and a favourite eminence, on which he sometimes rested during the chase, was denominated from him 'The King's Standing.' He was at Tutbury Castle from the 16th to the 20th of August, 1619; again on the 19th of August, 1621; and from the 16th to the 19th of the same month, in 1624."

In August, 1636, Tutbury was visited by King Charles I., and in 1634 he is stated to have spent a fortnight here. This was before the commencement of his troubles; but when he had decided on an appeal to the sword, he sent a mandate to the high sheriff of Staffordshire, commanding him to raise forces, both horse and foot, at the expense of the county, and to place them as a garrison in the castle of Tutbury; this was in November, 1642. On the 24th of May, 1645, the King himself, accompanied by Prince Rupert and a large army, took up his abode at Tutbury, and the troops were quartered in the surrounding villages. This was on Whitsunday, and on the following Tuesday the king marched off for Ashby-de-la-Zouch and Leicester. The battle of Naseby, which decided the affairs of the king, took place on the 14th of June; and on the 12th of August, 1645, the unfortunate monarch, attended by about 100 foot soldiers, visited Tutbury for the last time.

"The castle of Tutbury was one of the last places within the county of Stafford that held out for the king; the natural strength of its situation and the well-known bravery of its garrison rendered it almost impregnable. Repeated attempts had been made by the Parliament forces to take it."

It was surrendered to Sir William Brereton on the 20th of April, 1646, on terms more honourable than are generally granted. An order of Parliament for the total demolition of the castle soon followed, and this majestic pile was once more reduced to ruin.

TRADES AND MECHANICAL ARTS OF THE ANGLO-SAXONS.

(Abridged from Turner's History of the Anglo-Saxons.)

In the present state and under the fortunate constitution of the British islands, our tradesmen and manufacturers are an order of men who contribute essentially to uphold our national rank and character, and form a class of actual personal distinction superior to what the same order has in any age or country possessed, except in the middle ages of Italy. They are not only the fountains of that commerce which rewards us with the wealth of the world, but they are perpetually supplying the other classes and professions of society with new means of improvement and comfort; and with those new accessions of persons and property which keep the great machine of our political greatness in constant strength and activity.

Our earlier ancestors had neither learnt the utility of dividing labour nor acquired the faculty of varying its productions. They had neither invention, taste, enterprise, respectability, influence, or wealth. The tradesmen of the Anglo-Saxons were, for the most part, men in a servile state. The clergy, the rich, and the great, had domestic servants, who were qualified to supply them with those articles of trade and manufacture which were in common use. Hence, in monasteries, we find smiths, carpenters, millers, illuminators, architects, agriculturists, fishermen. Thus a monk is described as well skilled in smith-craft. Thus Wynfleda, in her will, mentions the servants she employed in weaving and sewing; and there are many grants of land remaining, in which men of landed property rewarded their servants who excelled in different trades. In one grant, the brother of Godwin gives to a monastery a manor, with its appendages; that is, his overseer and all his chattels, his smith, carpenter, fisherman, miller; all these servants, and all their goods and chattels.

The Anglo-Saxon artificers and manufacturers were for some time no more than what real necessity put in action. Their productions were few, inartificial, and unvaried. They lived and died poor, unhonoured, and unimproved. But, by degrees, the manumission of slaves increased the numbers of the independent part of the lower orders. Some of the emancipated became agricultural labourers, and took land of the clergy and the great, paying them an annual gafol, or rent; but many went to the burgs and towns, and as the king was the lord of the free, they resided in these under his protection, and became free burghers or burgesses. In these burgs and towns they appear to have occupied houses, paying him rent, or other occasional compensations, and sometimes performing services for him.

By slow degrees the increasing numbers of society, or their augmented activity, produced a surplus property beyond the daily consumption, which acquired a permanent state in the country in some form or other, and then constituted its wealth. Every house began to have some article of lasting furniture or convenience which it had not before; as well as every tradesman goods laid in store, and every farmer corn, or cattle, or implements of tillage more numerous than he once possessed. When this stage of surplus produce occurs, property begins to multiply; the bonds of stern necessity relax; civilization emerges; leisure increases, and a great number share it. Other employments than those of subsistence are sought for. Amusement begins to be a study, and a class of society to provide it becomes desired. The grosser gratifications then verge towards the refinements of future luxury. The mind awakens from the lethargy of sense, and a new spirit, and new objects of industry, invention, and pursuit, gradually arise in the advancing population. All these successions of improvement become slowly visible to

the antiquarian observer as he approaches the latter periods of the Anglo-Saxon dynasty. But they were not the accompaniments of its first state; or, if they at all existed, they were confined to the court, the castle, and the monastery; and were not indeed to be found among the inferior thegns or the poorer cloisters. Some of these had so little property that they could not afford to allow meat, and others not wheaten bread, as an article of their food. In such miserable abodes the comforts of surplus property could not be obtained; and where these are not general, the nation is poor. This epithet was long applicable to the Anglo-Saxon octarchy.

Both war and agriculture want the smith. Hence one of the most important trades of the Anglo-Saxons was the smith, who is very frequently mentioned. The smiths who worked in iron were called isernsmithas. They had also the goldsmith, the seolfersmith (silversmith), and the arsmith or coppersmith. Smiths are frequently mentioned in Domesday. In the city of Hereford there were six smiths, who paid each 1*d.* for his forge, and who made 120 pieces of iron from the king's ore. To each of them 3*d.* was paid as a custom, and they were freed from all other services.

The treow-wyrhta, literally tree or wood workman, or, in modern phrase, the carpenter, was an occupation as important as the smith's.

The sceowyrhta, or shoemaker, seems to have been a comprehensive trade, and to have united some that are now very distinct businesses. He says, in an ancient Anglo-Saxon dialogue, "My craft is very useful and necessary to you. I buy hides and skins, and prepare them by my art, and make of them shoes of various kinds; and none of you can winter without my craft." He subjoins a list of the articles which he fabricates, viz.—"Ankle leathers, shoes, leather hose, bottles, bridle thongs, trappings, flasks, boiling vessels, leather neck-pieces, halters, wallets, and pouches."

The salter, baker, cook, and fisherman were common occupations among the Anglo-Saxons.

Besides the persons who made those trades their business, some of the clergy, as we advance to the age preceding the Norman Conquest, appear to us as labouring to excel in the mechanical arts. Thus Dunstan, besides being competent to draw and paint the patterns for a lady's robe, was also a smith, and worked on all the metals. Among other labours of his industry, he made two great bells for the church at Abingdon. His friend Ethelwold, the bishop, made two other bells for the same place, of a smaller size; and a wheel full of small bells, much gilt, to be turned round for its music, on feast-days. He also displayed much art in the fabrication of a large silver table of curious workmanship. Stigand, the bishop of Winchester, made two images and a crucifix, and gilt and placed them in the cathedral of his diocese. One of our kings made a monk who was a skilful goldsmith an abbot. It was even exacted by law that the clergy should pursue these occupations; for Edgar says, "We command that every priest, to increase knowledge, diligently learn some handicraft." It was at this period that it began to be felt that skill could add value to the material on which it operated; and as the increasing wealth of society enabled some to pay for its additional cost, a taste for ornament as well as massy value now emerged.

The art of glass-making was unknown in England in the seventh century, when Benedict, the abbot of Weremouth, procured men from France, who not only glazed the windows of his church and monastery, but taught the Anglo-Saxons the art of making glass for windows, lamps, drinking-vessels, and for other uses.

The fortunate connexion which Christianity established between the clergy of Europe favoured the advancement of all the mechanical arts. We read perpetually of presents of the productions of human labour and skill passing from the more civilized countries to those more rude. We read of a church having a patine made with Greek workmanship; and also of a bishop in England who was a Greek by birth.

They had the arts of weaving, embroidering, and dyeing. Edward the Elder had his daughters taught to exercise their needle and their distaff. Indeed the Anglo-Saxon ladies were so much accustomed to spinning, that just as we in legal phrase, and by a reference to former habits now obsolete, term unmarried ladies spinsters, so Alfred in his will, with true application, called the female part of his family the spindle side. The Norman historian remarks of our ancient countrywomen that they excelled with the needle and in gold embroidery. Aldhelm's robe is described to have been made of a most delicate thread, of a purple ground, and that within black circles the figures of peacocks were worked among them of ample size.

Bede alludes to their jewellers and goldsmiths. From the custom of the kings making presents of rich garments, vases, bracelets, and rings to their witena gemot and courtiers, and of great lords doing the same to their knights, the trades for making these must have had much employment. One of their trades seems to have been the tavern, or the public-house; for a priest is forbidden to drink at the "wine tuns." An ale-house and ale-shop are also mentioned in the laws.

ROMAN MONUMENT AT IGEL, IN PRUSSIA.

Igel is a small village in Prussia, situated on the road from the ancient city of Treves to Luxemburg. There is nothing in the village worthy of particular notice; but the ancient Roman monument represented in the engraving has attracted attention to the place, and given rise to considerable speculation among antiquaries. The whole surrounding country is full of Roman remains. Treves itself, in the days of the Roman empire, was a place of great splendour;—its monuments and ruins attest the importance and magnitude of the town, which has been noticed in No. 173. The Emperor Augustus conferred on it the title of capital of Second Belgian Gaul; and Ammianus Marcellinus, says Malte Brun, "wishing to describe its extent, population, and edifices, calls it the Second Rome. The ruins of a Roman way between Treves and Reims are observed at some distance on the road which leads to Luxemburg. But perhaps the most curious monument which the Romans have left in all the country of the Gauls is the one at the village of Igel, in the same direction and on the same road. Antiquaries have examined it in vain, and the purpose for which it was erected is still doubtful. It is a sort of quadrangular tower, terminated in the form of a pyramid, and surmounted by a terrestrial globe, on which an eagle rests. Ausonius says that, like the pharos of Memphis, it rises above every other building. If it be the tower that he alludes to, some allowance must be made for poetical license. Its height, it is certain, is less than seventy feet, and its breadth not greater than fifteen. It is stated in a letter, published in 1824, and addressed to Vauquelin, the celebrated chemist, that the monument is crowned by a genius, with extended wings, kneeling on a globe. The author of the letter is probably mistaken; or, if his statement be correct, it proves the ignorance of the German architect who was appointed by government to repair the tower. We examined it carefully before it was repaired, and could easily distinguish an eagle in the same position as on several medals. It is well known that the head of the eagle was destroyed by a cannon-

ball in 1675, during the engagement in which the Marshal of Crequi was defeated on the plain of Treves.

"As to the purpose for which it was erected, it appears to us to have been a monument raised to the memory of the dead. It cannot be denied that a learned German is of a different opinion: he supposes that it was intended to record either the birth of Caligula or the marriage of Constantius Chlorus with the Empress Helen. It is not improbable that an ornament on one of the bas-reliefs—the figure of a man offering his hand to a woman—has originally led to this supposition. But it may be mentioned that the same opinion has been formerly maintained and refuted. The dances and games of the different genii with which the tower is decorated, as well as a figure of the shepherd Paris, are not incompatible with the design of a funeral monument. A mutilated inscription, which has been explained and restored by anti-

[Roman Monument at Igel, near Treves.]

quaries, leads us to conclude that the tower was built by two members of the *Secundini* family, in memory of Secundinus Securus, a wealthy merchant, the founder of Igel, during the latter part of the fourth century*."

The following is a short account of this very curious Roman monument from Goethe's Travels:—

"At Igel, on the road between Treves and Luxemburgh, I was struck by a Roman monument; being aware how happy the Romans were in the choice of the sites of their monuments and buildings, in fancy I got rid of the surrounding hovels which encumbered it, and then the position was fully fitting to the object. The broad stream of the Moselle, which is joined by the waters of the Sarr, wanders close by, and the pleasing undulation of the ground, and the luxuriant vegetation of the soil, all tend to give importance and dignity to the building, which may be termed an architectural sculptured obelisk. It rises in different stories, arranged in an artist-like manner, one above the other, ending in a kind of pinnacle, ornamented with scales, like tiles, surmounted by a ball, with an eagle and a serpent rising in the air. I trust some of the engineers whom the present war has brought to this country may be induced to make an accurate measurement of it, and make drawings of the figures which are still to be distinguished on its four sides. How many dull and shapeless obelisks have I seen erected in my time, no one ever thinking of referring to this as a model. It must be admitted that it is not of the best time, the style showing it to be of the lower age. In the subjects of the ornaments, one recognizes that desire which the Romans always had of handing down to posterity personal representations, and all the circumstantial details and demonstrations of activity and real life. Here are parents and children opposite to each other, people are eating in a family circle, and in order that the spectator may know whence comes the good cheer, loaded sumpter horses are seen approaching. Traffic and commerce are represented in various ways, for it seems that those by whom the monument was erected were commissaries of the army, thus fully testifying that then, as now, such gentry acquired sufficient riches by their calling.

"The whole obelisk is built of massive blocks of sandstone, and then, as from the face of a rock, were hewn out the ornaments; and it is to the adoption of this mode that the duration of this monument and its sculpture, through so many centuries, is to be ascribed."

ON HORSE-FOOD.

People generally imagine, when they hear the quality of oats mentioned, that their only desirable properties consist in their brightness of colour, purity of scent, and freedom from all appearance of having been damp or heated; but they rarely advert to the fact, that, when these objects have been attained, their main value yet rests in their weight; and a material difference may be found in samples which, to the hand and eye of one who is not a good judge of the article, may appear to be of nearly the same sort, though the bushel of the one kind may be several pounds lighter than the other. The following table will show the quantity of meal which, in ordinary seasons, is usually extracted from certain weights of that grain, and on which the nourishment to be obtained from it depends:—

Weight per bushel avoirdupois.

42 lbs.	produce in meal	25 lbs.	2 oz.	ditto in husk	16 lbs.	14 oz.
40	„	23	6	„	16	10
38	„	21	12	„	16	4
36	„	20	3	„	15	13
34	„	18	11	„	15	5
32	„	17	5	„	14	11

Thus it will be seen that the beast which is fed upon oats of the latter description (which abound in our markets) is a loser of about one-third of the nutriment which he would obtain if supplied with those of good quality; and if this be not looked to, he will, on a long journey, soon fall off in condition; for the price varies according to the weight, and stable-keepers take especial care not to buy the heaviest.

The custom of feeding by measure has thus led to great irregularity in the care and maintenance of horses, and has given rise to a prevalent notion that beans and peas are more nutritive, and consequently more heating than oats; though, according to an analysis made by Sir Humphry Davy, and inserted in his 'Elements of Agricultural Chemistry,' it was found that 1000 parts contained severally the following portions of matter:—

Grain.	Whole Quantity of Soluble, or Nutritive Matter.	Mucilage and Starch.	Saccharine Matter, or Sugar.	Gluten, or Albumen.	Extract, or insoluble Matter.
Good Scotch Oats	743	641	15	87	—
Common Horse-beans	570	426	—	103	41
Dry Grey Peas	574	501	22	35	16

Thus it will be seen that oats are, in fact, greatly superior, weight for weight, to either beans or peas; for the average weight of each, when of fair quality, may be assumed as—

Feed Oats	40 lbs.	Per Bushel.
Horse-beans	56	„
Grey Peas	60	„

and if oats be taken at the present price of 3*s*. 4*d*. per bushel, or 1*d*. per pound, the relative value of beans will then be 4*s*. 8*d*., and of peas 5*s*. per bushel.

The cavalry allowance to the army is four feeds of a quartern of oats, weighing 40 lbs. per bushel, or 10 lbs. daily for each horse, together with 12 lbs. of sound meadow hay. Upon this the cattle are kept in excellent working order, and no horse of equal size and muscle can be maintained in good condition upon less. On journeys he should have an additional feed, with a good handful of old beans, if the work be hard; and, once a week, when a leisure day occurs, he should, on the previous night, have a bran-mash, with an ounce of nitre or common salt in it, instead of oats. When our troops were in the Peninsula, the horses were fed, according to the custom of that country, upon barley and straw, only 8 lbs. of the former being allowed instead of 10 lbs. of oats, and they thrive equally well; the barley being considered in that proportion more nutritive, in consequence of the greater amount which it contains of starch, and the smaller quantity of husk. Many postmasters have since partly adopted the same plan; for discoloured barley, which is unfit for malting, may frequently be purchased as cheap as fine oats, and the weight of an equal measure is usually full one-fourth more; indeed, under the late depressed prices of wheat, many inferior samples of that grain have been applied to the same purpose.

An account has been published in the 'Sporting Magazine,' by Dr. Sully, of Wiveliscombe, in Somersetshire, of the mode of feeding, by which his light draught horses, which he constantly uses in single harness upon long journeys at a rapid pace, have been kept during a series of years in high health and perfect working order. The ingredients of the food are divided into four classes, containing different quantities of each, to be used as discretion or convenience may dictate, in the following proportions:—

	1st. lbs.	2nd. lbs.	3rd. lbs.	4th. lbs.
Bruised or Ground Beans, Peas, or White Corn	5	5	10	5
Hay, cut into Chaff	7	8	10	8
Straw, ditto	7	10	10	8
Steamed Potatoes	5	5	0	0
Malt-dust, or Ground Oil-cake	0	2	0	2
Brewers' Grains	6	0	0	0
Bran	0	0	0	7
	30	30	30	30

And 2 oz. of Salt to each

* Malte-Brun, Geography, vol. vii. p. 251.

The weight of each class is thus equal, and the quantity of nutriment contained in each is supposed to be the same; but he prefers the first and second classes; and we are surprised that he has not adverted to the use of raw carrots, which are well known to have a fine effect upon the wind, and strikingly to improve the appearance of the coat and general condition.

The Doctor, however, properly observes that grooms are wasteful of hay, and, by allowing the horses an unlimited use of it, tempt them to eat too much; his stables are, therefore without racks, and the provender is put into the manger in small quantities during the day. It is indeed a most excellent plan; for not only is the saving in food very considerable, but the animal is thus compelled to masticate it thoroughly, whereas young and greedy cattle are apt to devour part of their corn entire, and old horses lose much of the power of grinding it; it therefore passes through them entire, without affording any kind of nourishment.

The order and economy of the stable are points of the first consideration with every man who justly estimates the condition of his horse. The word, indeed, has an extensive meaning in the opinion of gentlemen, and seems to be so generally well understood, that any remarks on the subject might be deemed superfluous; but in the management of heavy draught cattle, kept more for work than show, it may be assumed to mean a healthy, mellow, clean-skinned hide, without much fat; a lively eye, and general appearance of health. This, however, can only be acquired by a sufficiency of wholesome food; but the quantity in which it should be administered, according to the strength and labour of the animal, and the different kinds and preparation which may be employed with advantage, merits the serious attention of every one who regards the expense; and upon this subject we confidently refer to the copious details which may be found under the head of 'British Husbandry,' in the 'Farmer's Library,' now publishing under the superintendence of the Society for the Diffusion of Useful Knowledge.

THEORIES OF LIGHT.

Two rival theories of light have, during nearly the two last centuries, divided the suffrages of philosophers. The corpuscular, investigated by Newton, accounts for many of the ordinary facts and laws, by supposing infinitely small material particles projected with inconceivable velocity in all directions, in straight lines, from luminous bodies; these are reflected back from polished surfaces, exactly as billiard balls are, and being attracted by transparent media through which they pass, are drawn out of their previous direction, or undergo refraction. Many other of the known facts are explained in a somewhat similar way.

Huyghens started the other theory, that of undulations. He supposed an infinitely subtile medium or æther to fill all space and penetrate all bodies; luminous bodies excite vibrations in this æther, which spread and propagate themselves in waves, exactly like those formed by dropping a stone into still water: by this hypothesis he explained the phenomena of reflexion and refraction in a way as plausible as the other theory.

But other phenomena have presented themselves calling for explanation. The singular fact of a double refraction existing in some crystals, the colours of the thin films formed by blowing soap-bubbles, the stripes and bands of light formed on placing opaque bodies in a narrow beam of sun-light; these and other phenomena drew the attention of philosophers to the question of preference between the theories. But little real advance can be said to have been made, till our distinguished countryman, Dr. T. Young (about 1802), pointed out the beautiful principle which he termed interference of the waves of æther: two waves propagated from opposite points may arrive at the same point either exactly at the same time, so as to conspire, and thus produce a double effect, or may follow at just such an interval as to oppose and clash, and thus mutually destroy each other. Upon this principle, which he proceeded fully to develope, he succeeded in explaining perfectly a vast range of phenomena, including all those above named. It is difficult, if not impossible, and certainly has never been done, to frame any application of the corpuscular theory which shall explain how two rays of light conspiring together shall produce, instead of a uniform double light, an alternation of dark and light spaces. But the analogy of the waves gives a perfect explanation.

A vast range of new facts have been elicited by modern research: the labours of Brewster, Malus, Arago, Fresnel, and Airy, have brought to light an immense assemblage of curious optical phenomena, all of which the undulatory theory explains in the most perfect and satisfactory manner, whilst nothing approaching to an explanation has been proposed on any hypothesis.

There are, however, a few phenomena for which no theory has as yet assigned a complete explanation. The absorption of light in such singular varieties of proportion, by different coloured media, the dark bands which are seen crossing the spaces of the prismatic spectrum, and several analogous facts are at present wholly unexplained: they have even been urged as objections against the theory of undulations; they are, however, at present no further objections than merely that they are unexplained; there is nothing to show that they may not be explained on these principles.

Another most material case is that of the unequal refrangibility of light, as exhibited by the prism. Of this fundamental fact in optics, no kind of explanation was afforded by the corpuscular theory, and (till lately) the undulatory was supposed to be absolutely at variance with it. M. Cauchy, however, has suggested a new modification of the first principles of the theory, which assigns a certain relation, by virtue of which such effects ought to take place. The verification of this theory must depend upon comparison of numerical data. As far as this has been yet done, it establishes M. Cauchy's principles in a most remarkable manner; but the data we at present possess are but scanty: researches, however, are known to be now in progress, which will, before long, throw some additional light on the subject.

DIFFRACTION OF LIGHT.

The following experiment is recommended for exhibiting, without any apparatus, by the light of a common candle or lamp (though only on a minute scale) the phenomenon of the diffraction or interference of light.

Take a small pocket lens (such as those commonly used for magnifying insects, &c.), stretch across it, close to the glass, a piece of fine wire, then applying the eye to the other side, look through it at a distant candle, (the wire being vertical, or parallel to the length of the flame,) and the dark space, or shadow of the wire will be seen beautifully and distinctly marked by several bands, alternately dark and bright in the direction of its length, whilst it will be edged on the outside all the way by one or more light parallel bands on each side. The centre band in the shadow is always a bright one; these bands are formed by the interference of the two portions of light which come from each side of the wire and diverge into the shadow.

ANALOGIES OF LIGHT AND SOUND.

If two pipes be pitched a little out of unison, and sounded together, they will produce not a uniform double harsh sound, but a series of regular beats or

alternations of sound and silence. So two streams of light arriving almost by the same length of route at the same point, will produce not a uniform double light, but stripes or alternations of darkness and light. The experiment is shown best in this way. Let the sun's light be admitted through a pin-hole into a dark room, (or what may be still better, let them be collected at the focus of a small lens;) provide a piece of perfectly regular plate glass, and cut it into two, so as to ensure two pieces of precisely the same thickness; lay these two pieces together on a table, and look at the image of the light reflected from them by a small magnifying lens, at a few inches' distance. By gently pressing one of the two pieces, it will be very easy to alter very slightly their inclination, and thus two images of the luminous point will be formed close together, and partly overlapping. In the part where they overlap, or where the light is double, will be seen (by the lens) a series of dark and light bands; these are produced by the interference of the two reflected rays with each other.

POLARIZATION OF LIGHT.

The fanciful term polarization has been applied to designate a particular state or condition into which light may be brought, the reality of which is evinced by the properties which actually distinguish the light so modified, by whatever name it may be described.

Light may be polarized by various means, reflexion from the surface of a transparent medium is one of the simplest. At a certain angle, perfectly, but more or less at all angles, the effect is produced. That it is produced is evinced by several experimental methods; the simplest is to look at the reflected light through a piece of tourmaline. This is the method used in the Adelaide Street Gallery. When the tourmaline is held in one position, the light of the clouds, reflected from a plate of glass, is almost wholly obscured; whilst in other positions it appears of its natural brightness. If a piece of unannealed glass, or a plate of mica, or a plate of rock crystal, or of several other crystallized bodies be interposed between the glass plate and the tourmaline, it appears tinged with vivid colours, arranged in various bands or rings. The explanation of these colours is satisfactory and complete on the undulatory theory of light; but no other explanation has ever been imagined by the supporters of any other theory.

MOUNTAIN COTTAGES.

They are scattered over the valleys, and under the hill sides, and on the rocks; and even to this day, in the more retired dales, without any intrusion of more assuming buildings.

> Cluster'd like stars some few, but single most,
> And lurking dimly in their shy retreats,
> Or glancing on each other cheerful looks,
> Like separated stars with clouds between.

The dwelling-houses and contiguous outhouses are, in many instances, of the colour of the native rock, out of which they have been built; but frequently the Dwelling or Fire-house, as it is ordinarily called, has been distinguished from the barn and byer by rough-cast and white-wash, which, as the inhabitants are not hasty in renewing it, in a few years acquires, by the influence of weather, a tint at once sober and variegated. As these houses have been, from father to son, inhabited by persons engaged in the same occupations, yet necessarily with changes in their circumstances, they have received without incongruity additions and accommodations adapted to the needs of each successive occupant, who, being for the most part proprietor, was at liberty to follow his own fancy; so that these humble dwellings remind the contemplative spectator of a production of nature, and may (using a strong expression) rather be said to have grown than to have been erected;—to have risen, by an instinct of their own, out of the native rock, so little is there in them of formality, such is their wildness and beauty. Among the numerous recesses and projections in the walls and in the different stages of their roofs, are seen bold and harmonious effects of contrasted sunshine and shadow. It is a favourable circumstance that the strong winds which sweep down the valleys, induced the inhabitants, at a time when the materials for building were easily procured, to furnish many of these dwellings with substantial porches; and such as have not this defence are seldom unprovided with a projection of two large slates over their thresholds. Nor will the singular beauty of the chimneys escape the eye of the attentive traveller. Sometimes a low chimney, almost upon a level with the roof, is overlaid with a slate, supported upon four slender pillars, to prevent the wind from driving the smoke down the chimney. Others are of a quadrangular shape, rising one or two feet above the roof; which low square is often surmounted by a tall cylinder, giving to the cottage chimney the most beautiful shape in which it is ever seen. Nor will it be too fanciful or refined to remark, that there is a pleasing harmony between a tall chimney of this circular form, and the living column of smoke ascending from it through the still air. These dwellings, mostly built, as has been said, of rough unhewn stone, are roofed with slates, which were rudely taken from the quarry before the present art of splitting them was understood, and are, therefore, rough and uneven in their surface, so that both the coverings and sides of the houses have furnished places of rest for the seeds of lichens, mosses, ferns, and flowers. Hence buildings, which in their very form call to mind the processes of nature, do thus, clothed with this vegetable garb, appear to be received into the bosom of the living principle of things, as it acts and exists among the woods and fields; and, by their colour and their shape, affectingly direct the thoughts to that tranquil course of nature and simplicity, along which the humble-minded inhabitants have, through so many generations, been led. Add the little garden with its shed for bee-hives, its small beds of pot-herbs, and its borders and patches of flowers for Sunday posies, with sometimes a choice few too much prized to be plucked; an orchard of proportioned size; a cheese-press, often supported by some tree near the door; a cluster of embowering sycamores for summer shade; with a tall Scotch fir, through which the winds sing when other trees are leafless; the little rill or household spout murmuring in all seasons; combine these incidents and images together, and you have the representative idea of a mountain cottage in this country so beautifully formed in itself, and so richly adorned by the hand of nature.—*From Wordsworth's Description of the Scenery of the Lakes.*

"*Cui Bono?*" "*Who gains?*"—There is hardly any equally harmless custom so offensive to me as the use of words and phrases taken from one language in the midst of a sentence written in another. But my dislike is reasonably heightened when the borrowed words and phrases are used without a correct perception of their meaning. Hardly any phrase has more frequently suffered misapplication than *cui bono*. The history of a phrase is always the best explanation, and may possibly correct the propensity to abuse this unfortunate pair of words. Cassius laid it down as a maxim, that in examining conflicting evidence as to which of two parties had perpetrated a crime, we should be guided to lay our suspicions by inquiring which party becomes a gainer by the crime. *Cui bono?* to whom is the act for an advantage? Who gains? The maxim was thus applied by Cicero to the inculpation of Clodius and the exculpation of Milo, and we have it, in Cicero's defence of Milo, handed down to us as "the Cassian maxim."—*From a Correspondent.*

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

LONDON:—CHARLES KNIGHT, 22, LUDGATE STREET.

Printed by William Clowes and Sons, Stamford Street.